TRENCH

Group Members:
Ailie Sofyiana
Chan Y. Loon

Definition

- General : A type of depression / digging in the ground.
- A number of areas exist in which trenches plays a significant role ;

Trench in general

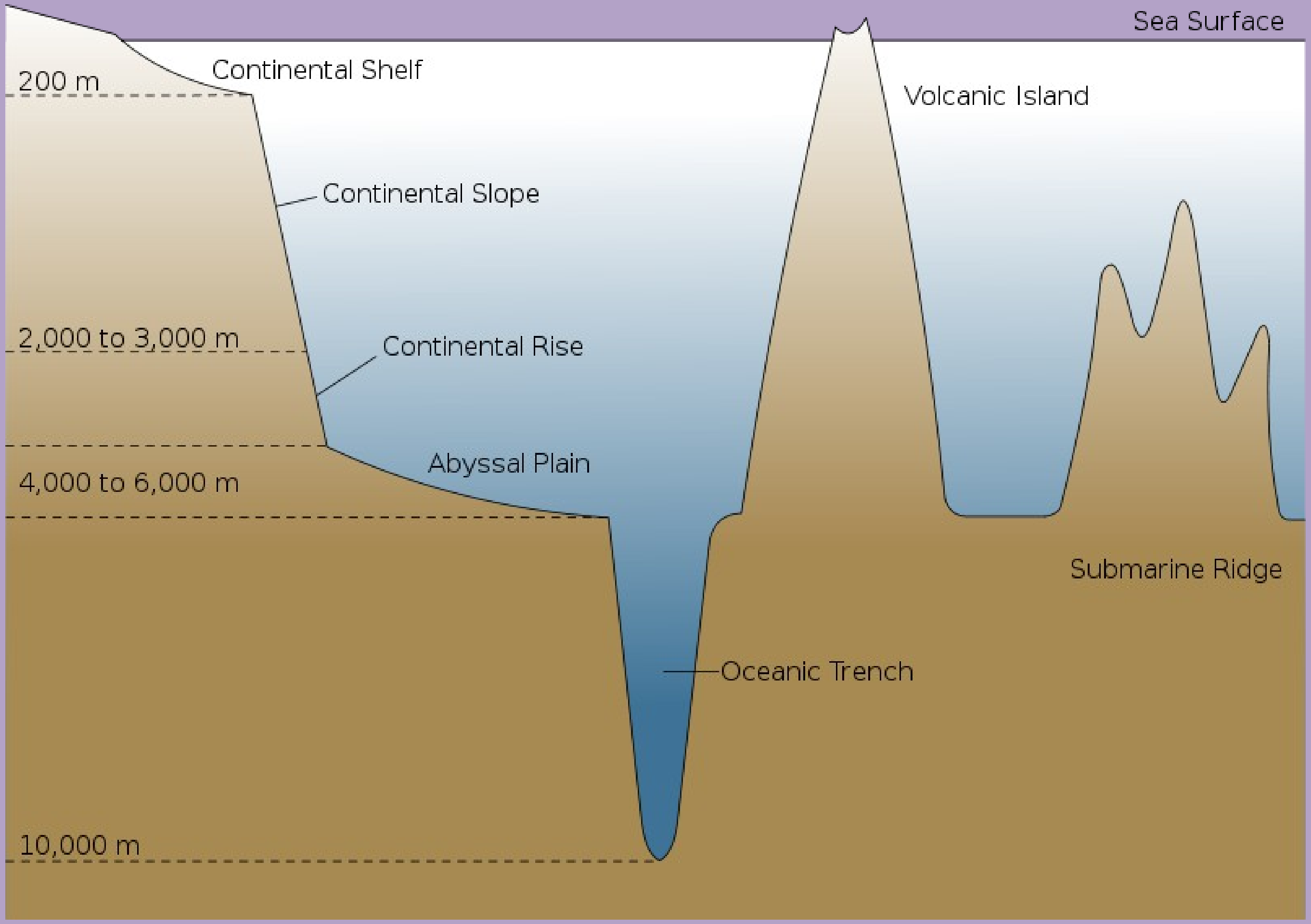
- Archeology : Trenches are built for searching and digging ancient ruins or to dig into strata of sedimented material to get a sideways view of the deposits.
- Infrastucture : The first step of creating a foundation wall.
- Military usage : For defense purposes.
- Geology : Refers to oceanic trench

Archeology

Infrastructure

Military purposes

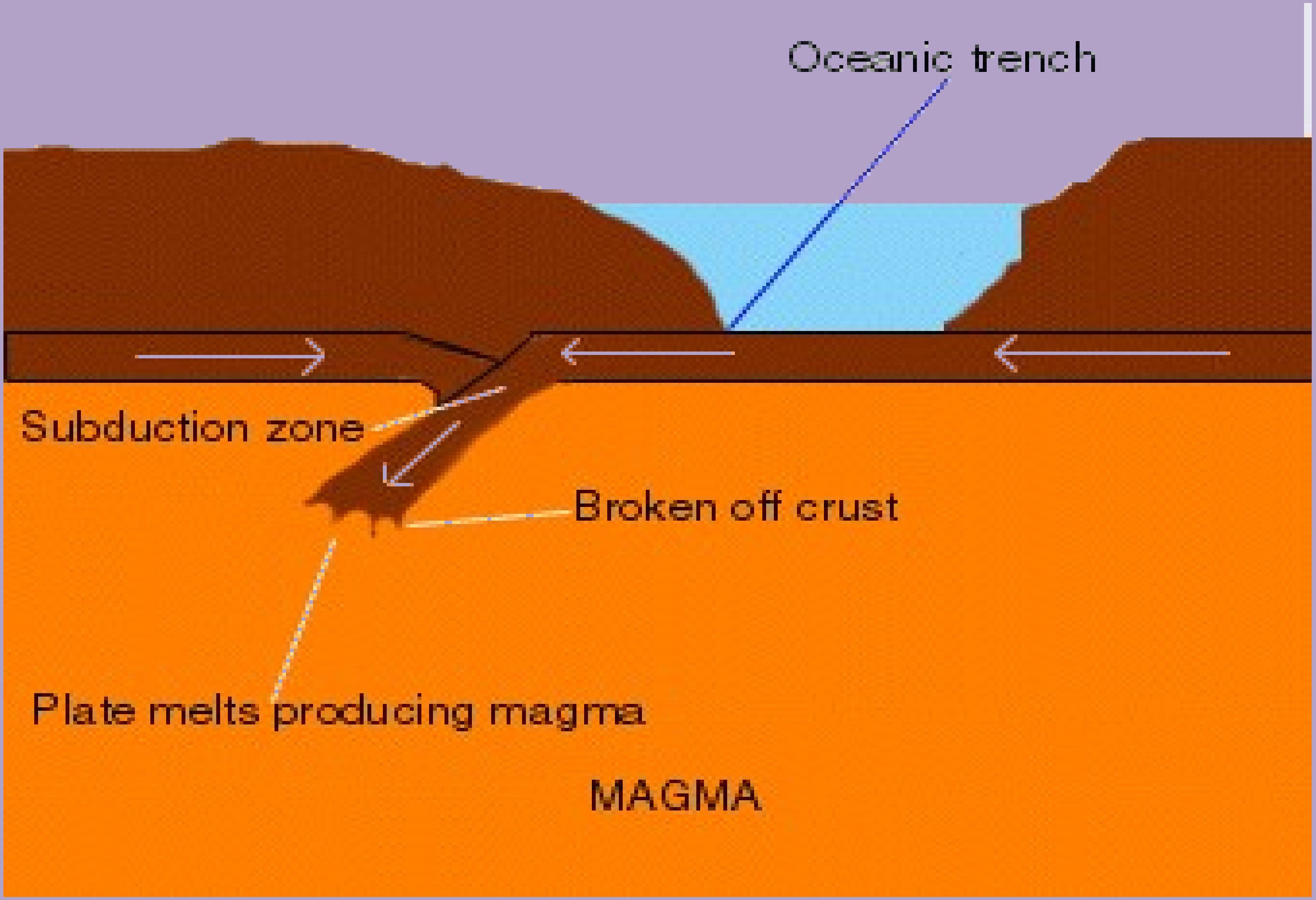
Geology


Sea Surface
200 m
Continental Shelf
Volcanic Island
Continental Slope
2,000 to 3,000 m
Continental Rise
Abyssal Plain
4,000 to 6,000 m
Submarine Ridge
Oceanic Trench
10,000 m

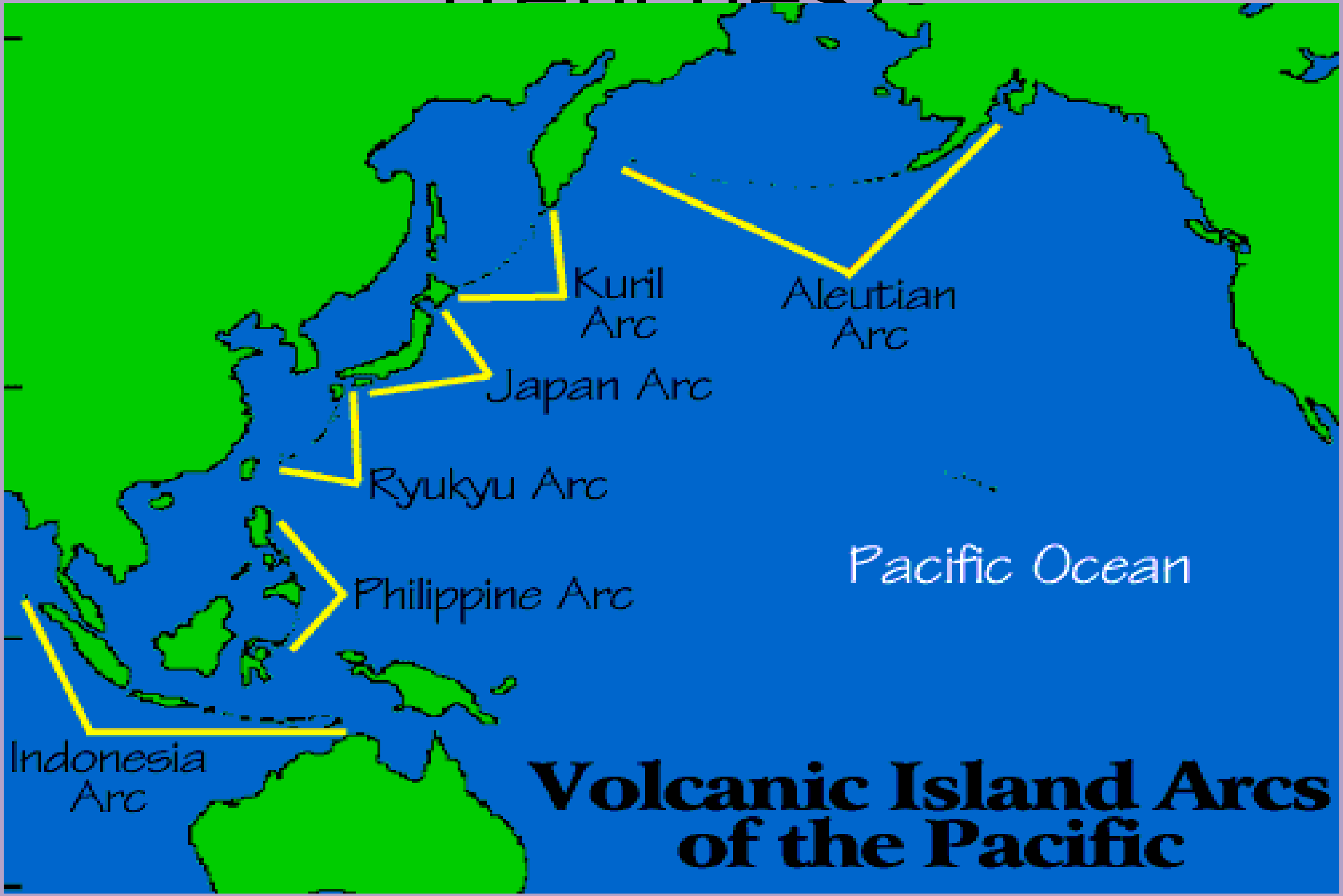
Definition of trench in geology

- Oceanic trenches (also known as deep-sea trenches) is any long, elongate, narrow, v- shaped depression in the deep-sea floor having steep sides and containing the greatest ocean depths (up to several kilometers depth).
- It is the lowest point on earth. Oceanic trenches are part of a system of tectonic processes termed subduction

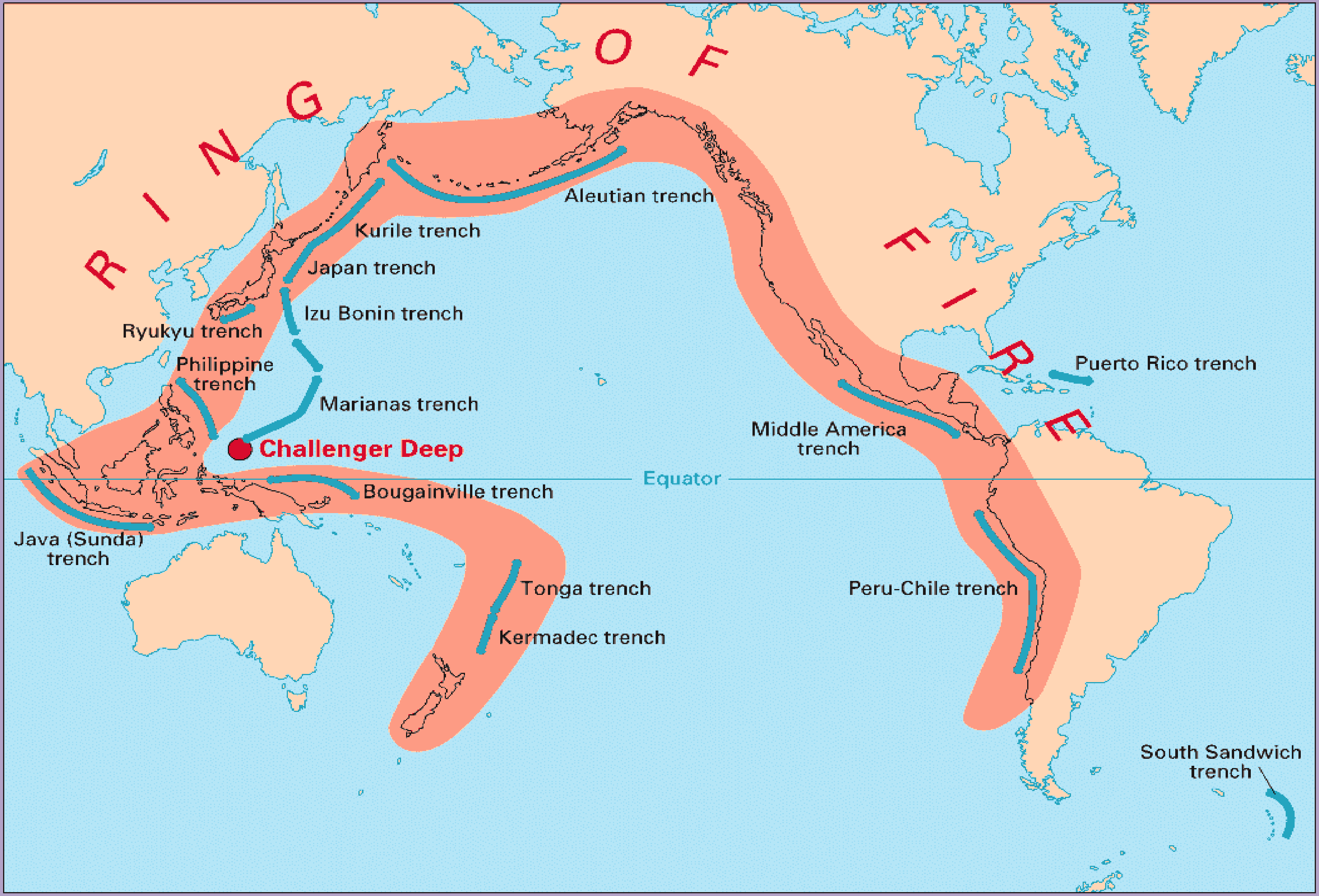
How does it formed?



Where can we find trenches?



The Pacific Ring of Fire



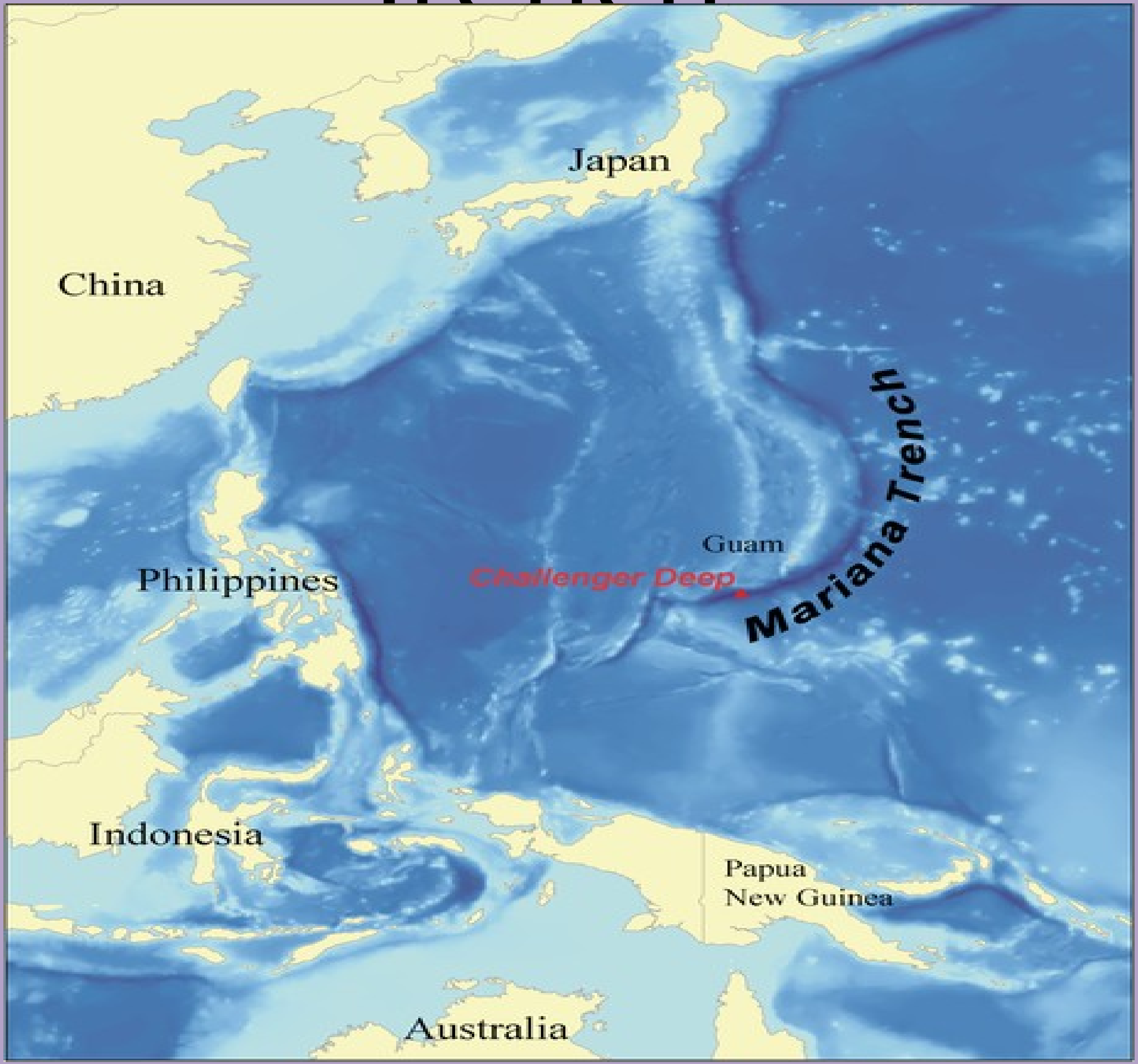
Factors that control the depth of trenches

- Supply of sediment.
- Age of the lithosphere at time of subduction.
- The size of the lithosphere plate.

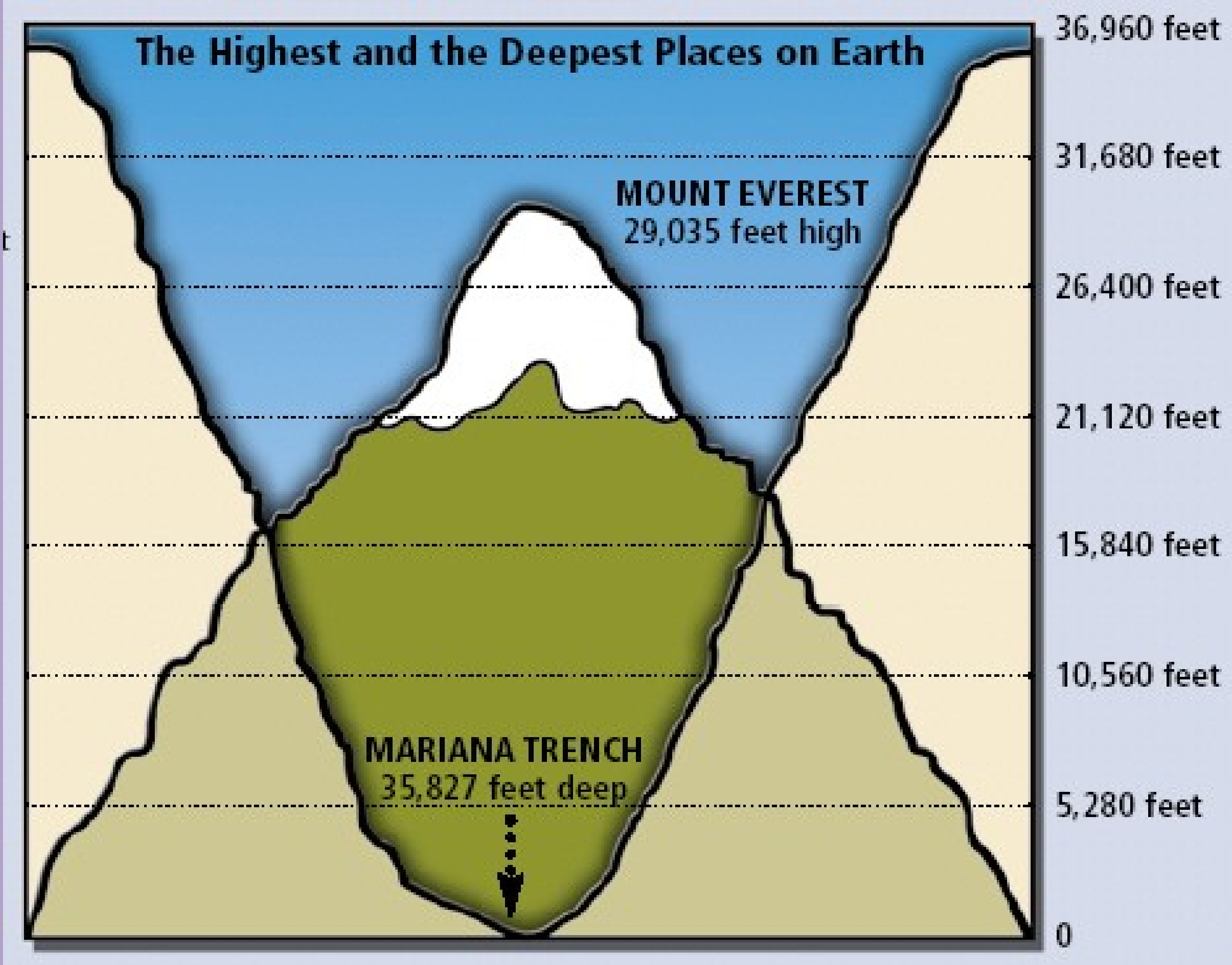
Case study: The Mariana Trench

- The deepest trench in the world.
- The lowest point is Challenger Deep of the Mariana Trench (35,978 ft)
- Located in the Pacific Ocean near Japan.
- Was first discovered in 1951

Location of the Mariana Trench



Mariana Trench vs Mount Everest



Importance of trenches

- Oceanic trenches are acting as carbon sinks.
- It maintains the Earth’s equilibrium system.

Possible composition in trenches:

- Based on the environment in the trenches, it’s highly possible that the composition in the trenches is carbonates.
- CO2 solubility increases in deep, cold water and high pressure (bicarbonates and carbonates are more stable).

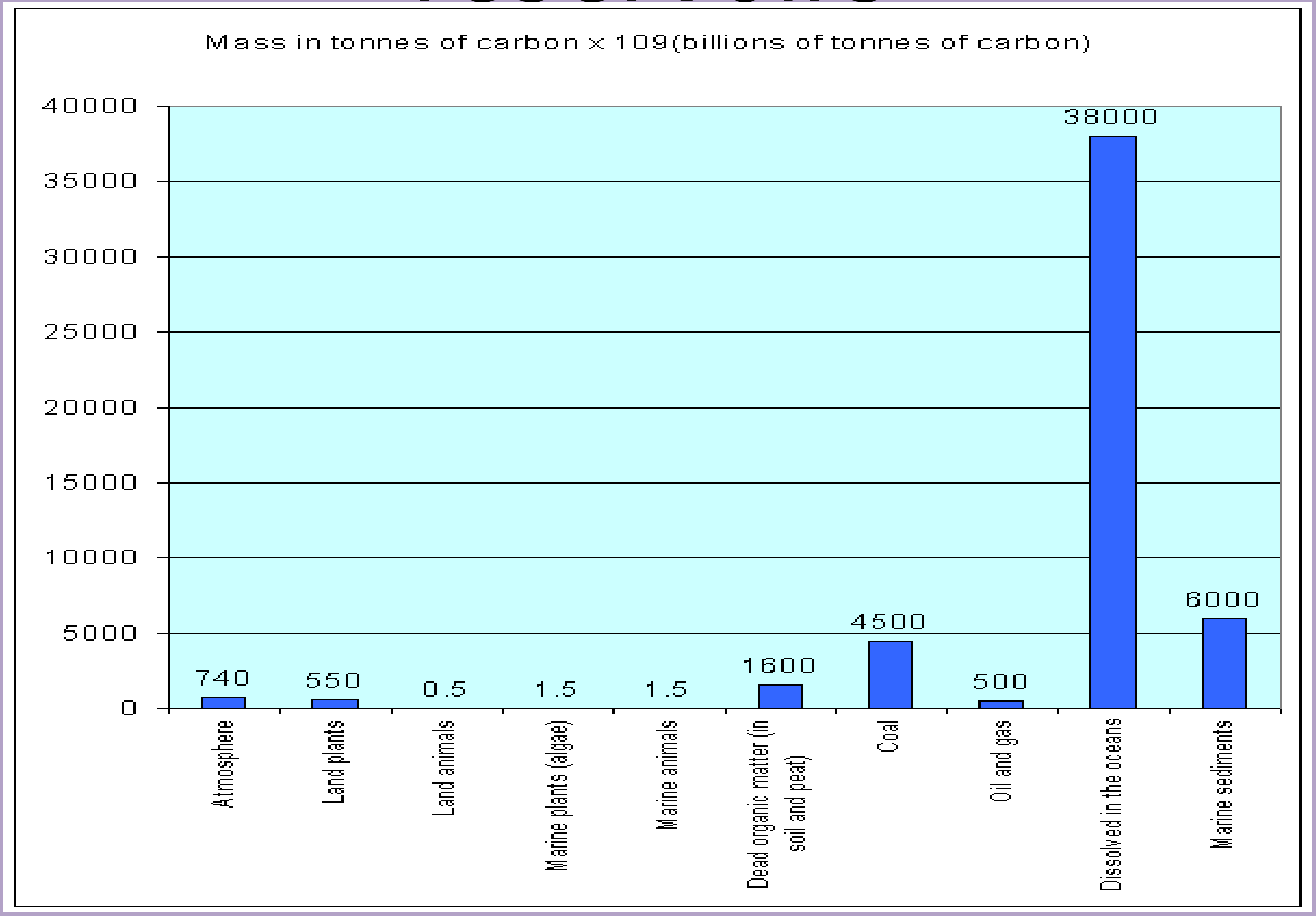
Factors that leads to accumulation of carbonates:

- Pressure : CCD dissolution increase with depth.
- Light : Photosynthesis only occur on the photic zone.
- Climate : Temperature regions favor carbonates production.

What is a carbon reservoir?

- A certain environment where dissolved carbons are being locked away.
- Examples of carbon reservoir are atmosphere, land plants, marine plants, coal, oil and gas and also open ocean.

List of possible carbon reservoirs



Conclusion

- Trenches are one of the unique land marks on the sea floor.
- It is formed by subduction of continental and oceanic plate.
- Mariana Trench is the deepest trench, Challenger Deep is the lowest point on Earth.
- Trenches acts as carbon sinks, it regulates the Earth’s equilibrium system.
- Carbonates may be found in the trenches.

Thank you.

ALL THE BEST FOR FINALS!